

WHAT IS CLAIMED IS:

1. A method for forming an electrolytic copper plating on an R-T-B magnet, wherein R is at least one of rare earth elements including Y, and T is Fe or Fe and Co, comprising using an electrolytic copper plating solution
5 containing 20-150 g/L of copper sulfate and 30-250 g/L of a chelating agent without containing an agent for reducing a copper ion, the pH of said electrolytic copper plating solution being controlled to 10.5-13.5.
2. The method for forming an electrolytic copper plating on an R-T-B magnet according to claim 1, wherein ethylenediaminetetraacetic
10 acid (EDTA) is used as said chelating agent.
3. The method for forming an electrolytic copper plating on an R-T-B magnet according to claim 1 or 2, wherein said agent for reducing copper ions is formaldehyde.
4. The method for forming an electrolytic copper plating on an
15 R-T-B magnet according to any one of claims 1-3, wherein said R-T-B magnet contains as a main phase an $R_2T_{14}B$ intermetallic compound, wherein R is at least one of rare earth elements including Y, and T is Fe or Fe and Co.
5. An R-T-B magnet having an electrolytic copper plating layer, in
20 which a ratio of $I(200)/I(111)$, wherein $I(200)$ is an X-ray diffraction peak intensity of a (200) face, and $I(111)$ is an X-ray diffraction peak intensity of a (111) face, is 0.1-0.45 in the X-ray diffraction of said electrolytic copper plating layer obtained with a $CuK\alpha 1$ line.
6. The R-T-B magnet according to claim 5, comprising a first layer
25 of said electrolytic copper plating layer, and a second layer formed on said first layer, said second layer being a plating layer comprising at least one selected from the group consisting of Ni, Ni-Cu alloys, Ni-Sn alloys, Ni-Zn alloys, Sn-Pb alloys, Sn, Pb, Zn, Zn-Fe alloys, Zn-Sn alloys, Co, Cd, Au,

Pd and Ag.

7. The R-T-B magnet according to claim 6, wherein said the second layer is constituted by an electrolytic or electroless nickel plating layer.

8. The R-T-B magnet according to any one of claims 5-7, wherein
5 said electrolytic copper plating layer has pinholes in the number of 0/cm² when measured by a ferroxyl test method (JIS H 8617), and further has a Vickers hardness of 260-350.

9. The R-T-B magnet according to any one of claims 5-8, wherein a
10 chemical conversion coating layer is formed on a plating layer constituted by said second layer.

10. The R-T-B magnet according to claim 9, wherein a surface of said chemical conversion coating layer is subjected to an alkali treatment.

11. An R-T-B magnet with a plating layer, wherein R is at least one
of rare earth elements including Y, and T is Fe or Fe and Co, wherein said
15 plating layer comprises an electrolytic copper plating layer and an electrolytic or electroless nickel plating layer in this order from the magnet side; wherein a ratio of I(200)/I(111), wherein I(200) is an X-ray diffraction peak intensity of a (200) face, and I(111) is an X-ray diffraction peak
intensity of a (111) face, is 0.1-0.45 in the X-ray diffraction of said
20 electrolytic copper plating layer obtained with a CuK α 1 line, and wherein said electrolytic copper plating layer is formed by an electrolytic copper plating method using an electrolytic copper plating solution containing
20-150 g/L of copper sulfate and 30-250 g/L of a chelating agent without
containing an agent for reducing a copper ion, the pH of said electrolytic
25 copper plating solution being controlled to 10.5-13.5.

12. The R-T-B magnet according to any one of claims 5-10, wherein it is used for a rotor or an actuator.

13. The R-T-B magnet according to claim 11, wherein it is used for a

rotor or an actuator.